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We Claim:

- Sub 1
- 5 1. A TP2 nucleic acid molecule encoding a polypeptide selected from the group consisting of:
- (a) the nucleic acid molecule of SEQ ID NO:13;
 - (b) the nucleic acid molecule that is nucleotides 1920-2820 of SEQ ID NO:13;
 - (c) the nucleic acid molecule of SEQ ID NO:19
 - 10 (d) a nucleic acid molecule encoding the polypeptide of SEQ ID NO:14, or a biologically active fragment thereof;
 - (e) a nucleic acid molecule encoding the polypeptide of SEQ ID NO:20, or a biologically active
 - 15 fragment thereof;
 - (f) a nucleic acid molecule that encodes a polypeptide that is at least 90 percent identical to the polypeptide of SEQ ID NO:14;
 - (g) a nucleic acid molecule that encodes a
 - 20 polypeptide that is at least 90 percent identical to the polypeptide of SEQ ID NO:20;
 - (h) a nucleic acid molecule that hybridizes under stringent conditions to any of (a)-(g) above; and
 - (i) a nucleic acid molecule that is the
 - 25 complement of any of (a)-(g) above.

2. The nucleic acid molecule that is SEQ ID NO:13 or SEQ ID NO:19.

- 30 3. The nucleic acid molecule that is nucleotides 1920-2820 of SEQ ID NO:13.

- Sub C2
- 35 4. A nucleic acid molecule encoding the polypeptide of SEQ ID NO:14 of SEQ ID NO:20.

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5. A nucleic acid molecule selected from the group consisting of: nucleotides 1-1689 of SEQ ID NO:13, nucleotides 1-1920 of SEQ ID NO:13, nucleotides 1920-2820 of SEQ ID NO:13, nucleotides 2089-2820 of SEQ ID NO:13, and nucleotides 2089-2859 of SEQ ID NO:13.

6. A nucleic acid molecule encoding amino acids 640-940 of the polypeptide of SEQ ID NO:14.

7. A vector comprising the nucleic acid molecule of claim 1.

8. A vector comprising the nucleic acid molecule of claim 2.

9. A vector comprising the nucleic acid molecule of claim 3.

10. A vector comprising the nucleic acid molecule of claim 4.

11. A vector comprising the nucleic acid molecule of claim 5.

12. A vector comprising the nucleic acid molecule of claim 6.

13. A host cell comprising the vector of claim 7.

14. A host cell comprising the vector of claim 8.

15. A host cell comprising the vector of claim 9.

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17. A host cell comprising the vector of claim 11.

10 ~~Sub C~~ 19. A process for producing a TP2 polypeptide
comprising the steps of:

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21. The process of claim 19 wherein the
20 polypeptide is amino acids 640-940 of SEQ ID NO:14.

25 (a) the polypeptide of SEQ ID NO:14;
 (b) the polypeptide that is amino acids 640-
 940 of SEQ ID NO:14;

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35 24. A TP2 polypeptide selected from the group
consisting of: amino acids 1-563 of SEQ ID NO:14; amino

acids 1-640 of SEQ ID NO:14; amino acids 640-940 of SEQ ID NO:14; amino acids 696-940 of SEQ ID NO:14; and amino acids 696-953 of SEQ ID NO:14.

5 25. The TP2 polypeptide of claim 22 that does not possess an amino terminal methionine.

10 26. A method of increasing proliferation of a cell, comprising expressing a nucleic acid encoding TP2 or a biologically active fragment thereof, in the cell.

15 27. A method of increasing telomerase activity in a cell, comprising expressing a TP2 gene, or a biologically active fragment thereof, in the cell.

20 28. A method of decreasing telomerase in a cell, comprising expressing a TP2 mutant in a cell, wherein the mutant does not have TP2 biological activity.

25 29. A nucleic acid molecule encoding a mutant TP2 polypeptide, wherein the codon for aspartic acid at amino acid position 868 or 869 is changed to a codon for alanine.

30 30. A nucleic acid molecule encoding a mutant TP2 polypeptide, wherein the codons for aspartic acid at amino acid positions 868 and 869 are changed to codons for alanine.

31. A polypeptide encoded by the nucleic acid molecule of claim 29.

35 32. A polypeptide encoded by the nucleic acid molecule of claim 30.

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